

Coccidia

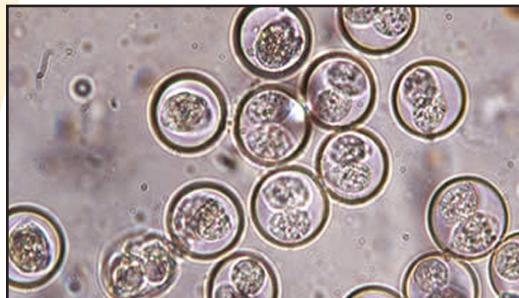
What is it?

Coccidia are microscopic, spore-forming, single cell protozoa. Coccidia are intercellular parasites; they must live and reproduce within an animal cell. The parasites are members of the genus *Emeria* and have a complex life cycle. Coccidia can infect all mammals, so the cervid industry like all livestock, are certainly at risk for infection. An infection with these parasites is known as coccidiosis. Coccidia are host specific, meaning the species that affects poultry, for example, does not affect deer.

How is it spread?

The life cycle of these parasites is rather complex. As with other internal parasites, there is a free living stage that takes place outside of the animal and a parasitic phase which takes place in the intestines of the host. The single cell, oocyst (eggs) passed in the feces of animals are resistant to disinfectants and can remain in the environment for long periods of time, especially in shaded moist soil. Extended periods of wet weather can accelerate parasite and bacterial growth. When first passed the oocyst isn't infective. It must undergo sporulation (hatching) which requires oxygen and moisture. The time required for development is temperature dependent but in general the warmer the weather, the faster the development, unless the temperature is high enough to kill the organism. After sporulation, the oocysts may survive for a year or longer if they are protected from direct sunlight.

When an animal ingests a sporulated oocyst, the sporozoites are released and enter the cells lining the small intestines and the life cycle takes about 14 days. The replication of the coccidian within the host's intestinal cells and the following rupture of the cells are responsible for



The oocysts sporulate (produce spores) and the sporulated oocysts are ingested by the host and then the sporozoites are released in the intestine and the cycle moves on eventually producing macrogametocytes which multiply to a phenomenal number of oocytes when released into the lumen of the intestine and pass out the feces. Below is an example of multiplication:

1 oocyst



8 sporozoites



120,000 first generation merozoites



30 second generation merozoites



80% macrogametocytes



23,040,000 oocysts

the disease and clinical signs that develop. The severity of the disease is directly related to the number of infective oocysts ingested.

Signs and Symptoms Typical in Cervid

Subclinical animals may appear outwardly normal but have reduced feed consumption, feed conversion and growth performance.

Clinical coccidiosis can be deadly and requires prompt treatment, fawns are more susceptible. A fecal test should be done to diagnose properly. Signs may include:

- Diarrhea or dirtiness around the tail
- Rough hair coats
- Anemia can occur where you will see fawns strain to pass feces
- As the infection persists-severe diarrhea with streaks of blood, followed by severe dehydration and death

By the time clinical signs are apparent much of the damage has occurred.

Disease Management

The age and condition of a deer population affects the level of parasitism and disease. Prevention is always best if possible.

As always, keep pens, clean, dry and free from overcrowding, good sanitation and hygiene are essential.

Cervid Solutions recommends no more than 4-6 adult deer per acre in your fawning pens

Feed should not be kept on the ground, but instead should be elevated.

Good nutrition is essential for maintaining the health of your herd. Feed with essential mineral and vitamin supplementation should be provided.

Colostrum when fawns are born is essential in passing immunity and preventing disease, adequate intake of colostrum will help fawns cope with disease

Stress propagates disease and infection. Times of weaning fawns and handling may be times of high stress, reduce if at all possible.

A fecal test is your diagnostic tool

Points to Remember

- Coccidia are microscopic protozoan parasites
- Infection of coccidia is known as coccidiosis
- Coccidia are host/species specific
- Coccidia have a complex life cycle, multiply and are spread through ingestion of infected fecal matter
- In a clinical animal, symptoms include severe diarrhea with streaks of blood followed by severe dehydration and death, with fawns being more susceptible
- Overcrowding creates an environment for rapid spread of disease, no more than 4-6 adult deer per acre in fawning pens is advised
- Coccidia is fairly easy to manage with correct management practices and treatment if infected, commercial treatments are easily obtained